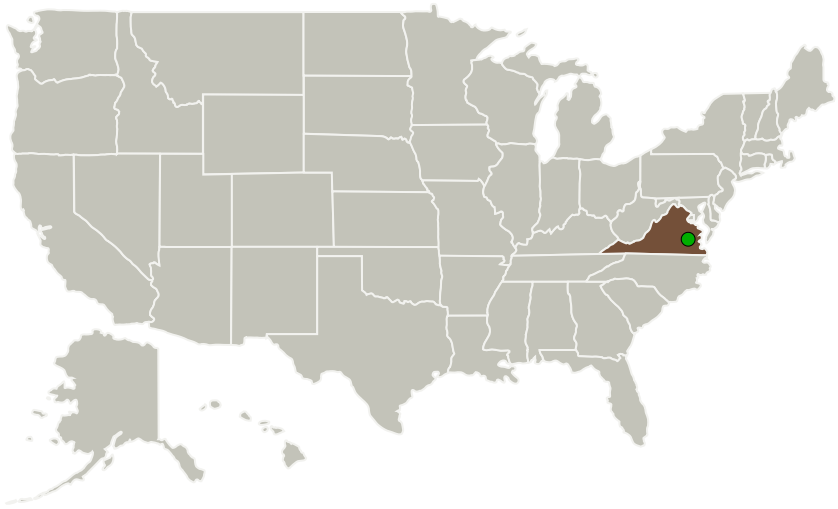
Laser Transmitter for Space-Based Atmospheric and Oceanographic LIDAR, Phase II

Completed Technology Project (2015 - 2017)

Project Introduction

echnical Abstract: IThis Phase II SBIR program will build on successful Phase I work to provide Technology Readiness Level 4 (TRL-4) laboratory brassboard demonstration of laser sources and non-linear wavelength converters with significant improvements in efficiency and reduction in size, weight, and power consumption compared to systems currently available for space-based instruments planned for the coming 10 to 15 years. This new-generation technology is needed to reduce the size and weight of flight hardware to make it compatible with affordable, more capable satellite payloads. In particular we propose to demonstrate a novel laser transmitter architecture capable of providing a factor of two to three higher average power, pulse energy, and efficiency than laser systems flown on first-generation space-based active remote sensing systems. Our proposed program also includes brassboard demonstration of a highly-efficient wavelength conversion to the blue spectral region (450-500 nm) desired for oceanographic lidar sensors, of interest both for ACE and nearer-term Earth Venture missions.

Primary U.S. Work Locations and Key Partners



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Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
Fibertek, Inc.	Lead Organization	Industry	Herndon, Virginia
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations
Virginia

Project Transitions

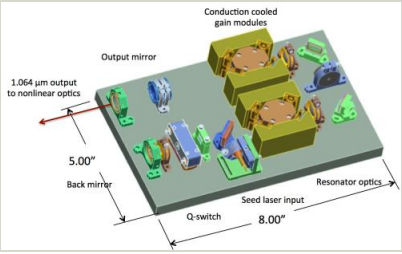
June 2015: Project Start

June 2017: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137770)*

Images



Briefing Chart
Laser Transmitter for Space-Based Atmospheric and Oceanographic LIDAR Briefing Chart *(https://techport.nasa.gov/image/133969)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Fibertek, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

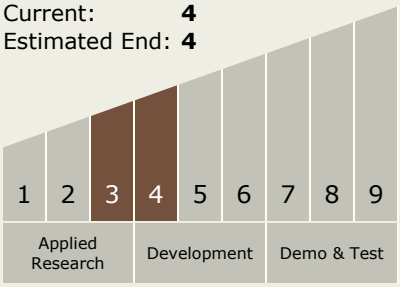
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Charles Culpepper

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System